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Corrigendum: Design and evaluation of a multi-sensory representation of scientific data

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KEYWORDS

Universal Design for Learning, BVI users/learners, multi-sensory representations, non-visible science, arbitrary representations

A corrigendum on

[Design and evaluation of a multi-sensory representation of scientific data](#)

by Varano, S., and Zanella, A. (2023). *Front. Educ.* 8:1082249. doi: 10.3389/educ.2023.1082249

In the published article, there was an error. The “mJy” was misspelled as “mY.” A correction has been made to the caption of Figure 1, “A.”

The sentence previously stated:

“Blue color represents regions at intensity higher than 4 mY/beam.”

The corrected sentence appears below:

“Blue color represents regions at intensity higher than 4 mJy/beam.”

In the published article, the reference for [CAST, 2018](#) was incorrectly written as “CAST (2018). *Universal Design for Learning Guidelines Version 2.2. EdTechHub.ItemAlsoKnownAs: 2405685.*” It should be “CAST (2018). *Universal Design for Learning Guidelines Version 2.2.* Available online at: <https://udlguidelines.cast.org/>.”

In the published article, the reference for [Friendly, 2008](#) was incorrectly written as “Friendly, M. (2008). A brief history of data visualization, in *Handbook of Data (Visualization Berlin; Heidelberg: Springer Handbooks Comp. Statistics. Springer)*. doi: 10.1007/978-3-540-33037-0_2.” It should be “Friendly, M. (2008). “A brief history of data visualization,” in *Handbook of Data Visualization (Berlin; Heidelberg: Springer Handbooks Comp. Statistics. Springer)*. doi: 10.1007/978-3-540-33037-0_2.”

In the published article, the reference for [Grassini, 2015](#) was incorrectly written as “Grassini, A. (2015). *I ciechi e L'esperienza Del Bello: Il Museo Tattile Statale Omero di Ancona. Per Un'estetica Della Tattilità.* Roma: Armando Editore.” It should be “Grassini, A. (2015). *I ciechi e L'esperienza Del Bello: Il Museo Tattile Statale Omero di Ancona. Per Un'estetica Della Tattilità.* Roma: Armando Editore.”

In the published article, there was an error. The word “impairment” was misspelled. A correction has been made to **Methods**, “3.2. *Testing users*.”

This sentence previously stated:

“The sample of 22 users interviewed as part of the final evaluation of the exhibit was selected again based on the age, sensory impairment, and scientific literacy parameters.”

The corrected sentence appears below:

“The sample of 22 users interviewed as part of the final evaluation of the exhibit was selected again based on the age, sensory impairment, and scientific literacy parameters.”

In the published article, there was an error. There was an unclear sentence. A correction has been made to **Implementation and preliminary tests**, “4.1. *Design of haptic representation and preliminary tests*.”

This sentence previously stated:

“We proposed to users two different haptic representations: one showing a region of the sky with different point-like sources and one representing the different intensity of a single objects (Figure 1).”

The corrected sentence appears below:

“We proposed to users two different haptic representations: one showing a region of the sky with different point-like sources and one representing regions at different intensities of a single object (Figure 1).”

In the published article, there was an error. The word “a” was used where “an” was appropriate. A correction has been made to **Implementation and preliminary tests**, “4.2. *Design of acoustic representation and preliminary tests*.” This sentence previously stated:

“However, the users thought the sources were distributed in a 3D space, instead of the intended 2D one, namely on a imaginary 2D map “in front” of the user.”

The corrected sentence appears below:

“However, the users thought the sources were distributed in a 3D space, instead of the intended 2D one, namely on an imaginary 2D map “in front” of the user.”

In the published article, there was an error. Represented fluxes were the same for all sources, we incorrectly represented observed fluxes as having intrinsic intensity. A correction has been made to **Implementation and preliminary tests**, “4.2. *Design of acoustic representation and preliminary tests*.”

This sentence previously stated:

“All the participants recognized the different sound intensities associating them to the distance of the source, and assuming that the intrinsic intensity of the sources was the same.”

The corrected sentence appears below:

“All the participants recognized the different sound intensities associating them to the distance of the source, and assuming that the intensity of all sources was the same.”

In the published article, there was an error. There was a misplaced parenthesis. A correction has been made to **Implementation and preliminary tests**, “4.3. *Design of the multi-sensory representation and preliminary tests*.”

This sentence previously stated:

“This meant losing the information about the two channels (stereo) acoustic stimulus, which anyway was considered as not necessary for representing objects at astronomical distances, for which the parallax (different apparent position from left or right) ear is not significant.”

The corrected sentence appears below:

“This meant losing the information about the two channels (stereo) acoustic stimulus, which anyway was considered as not necessary for representing objects at astronomical distances, for which the parallax (different apparent position from left or right ear) is not significant.”

In the published article, there was an error. The word “object” was used where “objects” was appropriate. A correction has been made to **Implementation and preliminary tests**, “4.3. *Design of the multi-sensory representation and preliminary tests*.”

This sentence previously stated:

“The shapes of the top bolts chosen to represent different object were: convex bolts for galaxies, wing bolts for active galactic nuclei, blind bolts for unknown sources (Figure 3).”

The corrected sentence appears below:

“The shapes of the top bolts chosen to represent different objects were: convex bolts for galaxies, wing bolts for active galactic nuclei, blind bolts for unknown sources (Figure 3).”

In the published article, there was an error. A sentence has been rephrased for clarity. A correction has been made to **Results**, “5.1. *The analogy with experience*.”

This sentence previously stated:

“Both the preliminary multi-sensory and the final exhibit proven to be effective for one of our main aims, i.e., creating an effective and meaningful experience without leading to misunderstandings and misinterpretation due to an uncontrolled connection with reality and previous experience.”

The corrected sentence appears below:

“Both the preliminary multi-sensory and the final exhibit proven to be effective for one of our main aims, i.e., creating a meaningful experience without leading to misunderstandings and misinterpretation due to an uncontrolled connection with reality and previous experience.”

In the published article, there was an error. The word “an” was used where “a” was appropriate. A correction has been made to **Discussion and conclusions**.

This sentence previously stated:

“We conclude that multi-sensory representations of astronomical data are a promising way to convey in an universal and effective way scientific and in particular astronomical concepts to the general public and the students in schools.”

The corrected sentence appears below:

“We conclude that multi-sensory representations of astronomical data are a promising way to convey in a universal and effective way scientific and in particular astronomical concepts to the general public and the students in schools.”

The authors apologize for these errors and state that they do not change the scientific conclusions of the article in any way. The original article has been updated.

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